Michigan Zoonotic & Vector-Borne Disease
Surveillance Summary

Lyme Disease

June 2013

Lyme disease continues to be the most commonly reported vector-borne disease in the United States; approximately 33,000 cases were reported nationally in 2011[1]. In the U.S. cases tend to be geographically focused in the northeastern and north-central United States, but Lyme disease is also endemic and expanding in the Upper-Midwest. In Michigan, 98 cases were reported in 2012 with most Michigan exposures occurring in the Upper Peninsula and western Lower Michigan.

The tick vector, *Ixodes scapularis* (Blacklegged tick), is now endemic in the western Lower Peninsula along Lake Michigan, and the highest tick populations occur among coastal communities. *I. scapularis* is also responsible for transmitting other diseases to humans including anaplasmosis and babesiosis, though both are rare in Michigan.

In 2012, MDCH staff conducted human case surveillance, tick field investigations, and surveys of the public, recreational parks staff, and physicians. In 2013 staff will continue to conduct completeness reviews of Lyme disease case follow-up investigations and report annual findings to the public. Additionally, MDCH plans to continue field ecologic surveillance for Blacklegged ticks in the state with the help of its partners. Educational materials will continue to be made available to the public via the MDCH "Emerging Diseases" Website.

www.michigan.gov/emergingdiseases

98

There were 98 confirmed and probable cases of Lyme disease reported in 2012.

50%

Half of cases with a reported onset date occurred by mid-July.

24 to 48

Removing ticks within 24 to 48 hours of attachment greatly reduces the risk of contracting Lyme disease.

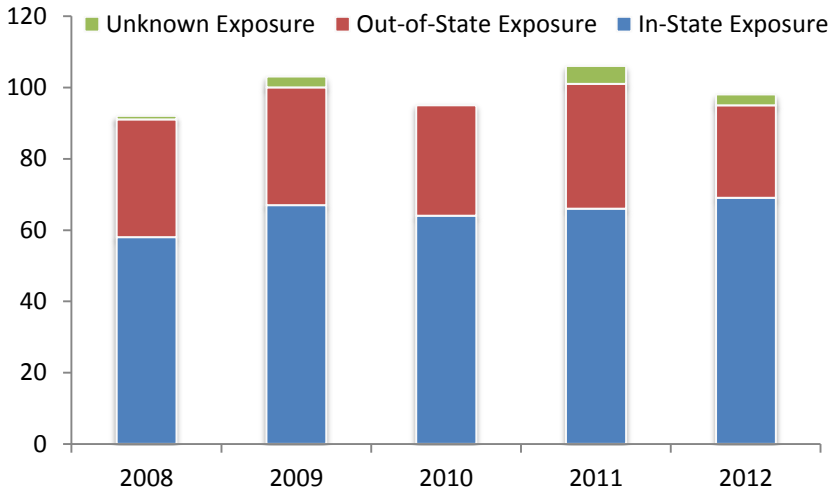
[1]Source: CDC Reported cases of Lyme disease by state or locality, 2002-2011.

Prepared by the Michigan Department of Community Health
Division of Communicable Disease
Zoonotic Disease and Special Projects Section

Michigan Department of Community Health
MDCH

2012 Lyme Disease Data

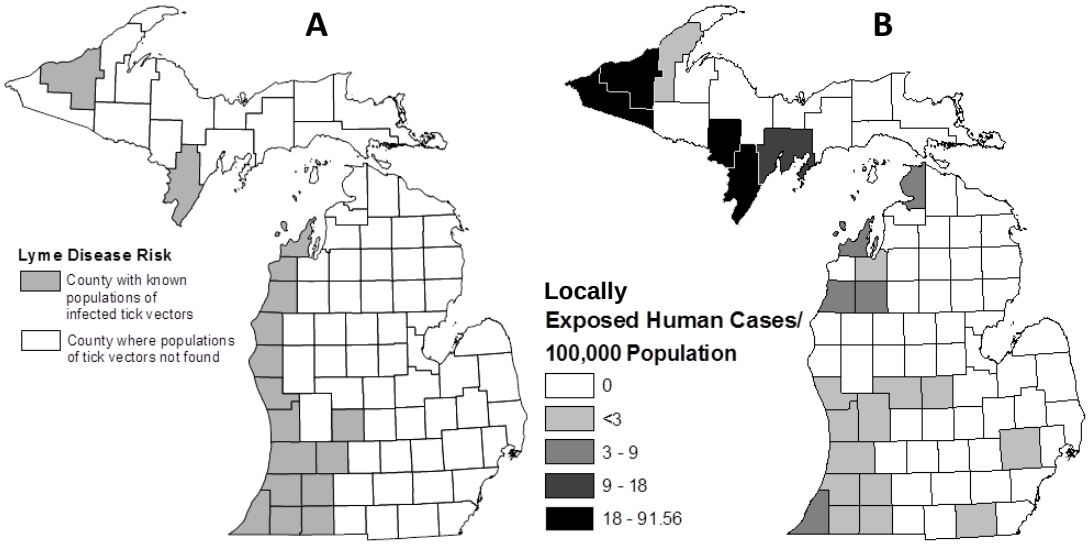
Michigan Lyme Disease Cases by Year, 2008--2012



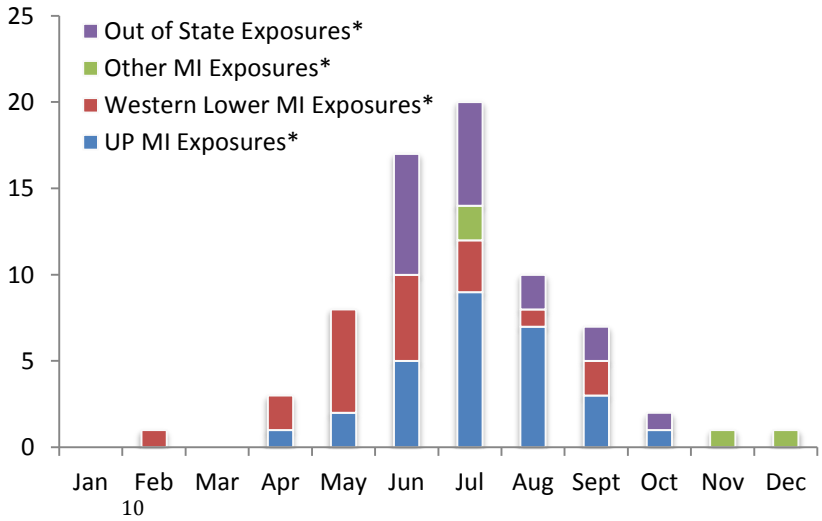
- A total of 98 probable and confirmed cases were reported to MDCH in 2012, a slight decrease from 2011.
- Sixty-nine patients reported potential exposure in Michigan.
- The incidence rate in Michigan for 2012 was 0.97 cases per 100,000 persons.
- Incidence rates for 2012 differ between the Upper Peninsula (14.5 cases per 100,000 persons) and the western Lower Peninsula (1.1 cases per 100,000 persons).

The maps at right highlight Michigan counties by Lyme disease human case incidence and potential risk based on known populations of vectors.

A) Counties with blacklegged tick populations identified by field researchers.
B) Incidence of locally exposed Lyme disease cases (ie. cases exposed in county that is shaded).



2012 Lyme Disease Case Onset by Month



Human case onset dates coincide with tick activity:

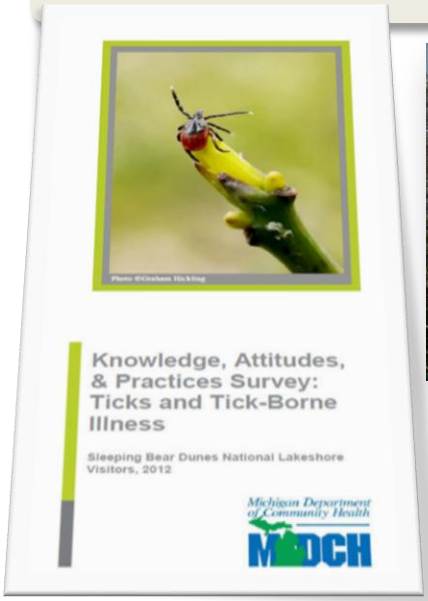
Adult ticks often have the highest infection rate and are active in the early-spring and the fall, generally at temperatures above 45°F. Because of their large size they are more easily detected.

Nymphal ticks are responsible for a majority of human Lyme disease due to their small size (difficult to notice and remove promptly) and are active during the warmer months (May-August) when people are recreating and working outdoors.

Special Projects

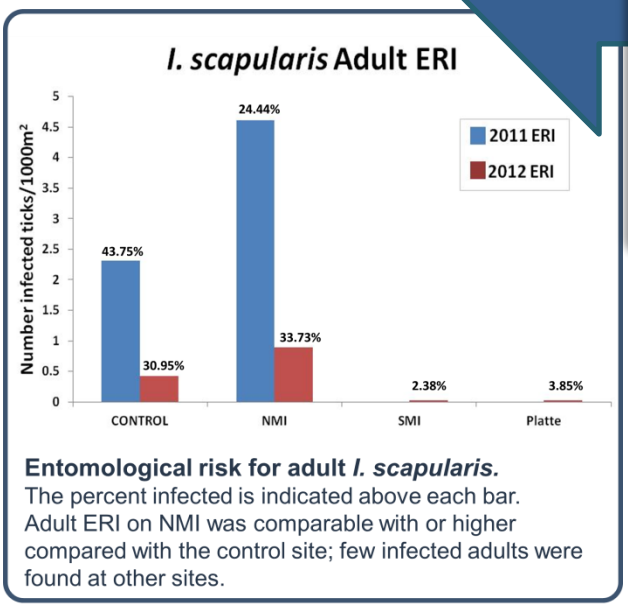
Surveys and Public Education

Michigan State University and MDCH partnered during 2012 to complete several projects aimed at assessing public and employee knowledge about Lyme disease prevention at Sleeping Bear Dunes National Lakeshore. Sleeping Bear Dunes hosts over one million visitors each year. Employees and volunteers were given a pre-test, received tick training, and post-test. Significant progress was made in improving employee and volunteer confidence in educating visitors to the park about tick safety, and trail-head markings in tick habitats and prevention information in park brochures were also improved.



Field Surveys and Risk Determinations

Field sampling was conducted during 2012 to determine the entomological risk index (ERI) at sites within Sleeping Bear Dunes National Park, as compared to a control site in southwestern Lower Michigan. The ERI is the number of infected ticks encountered over 1000m^2. During the time of year when adult ticks are active (spring & fall) the risk index is highest on N. Manitou Island (NMI) and at the control site. However, during the peak visitation period when nymphal stage ticks are active, the ERI was lower at all sites within the park than the control site.



Entomological risk for adult *I. scapularis*.
The percent infected is indicated above each bar. Adult ERI on NMI was comparable with or higher compared with the control site; few infected adults were found at other sites.

What Can Be Done?

Public Health Agencies can

- Monitor Michigan's tick populations
- Maintain Lyme disease surveillance system
- Offer tick identification and testing services to the public
- Make Michigan data publicly available
- Promote tick-borne disease prevention guidance

Health Providers can

- Review public health data regarding the risk of Lyme disease in Michigan
- Diagnose and treat infections using best practices
- Report cases promptly to your local health department
- Remind patients about the risk of Lyme disease in your area, and ways to prevent infections

Everyone can

- **Inform** yourself about where ticks can be encountered in Michigan
- **Prevent** tick bites by taking precautions and using EPA approved repellents on skin and clothing
- **Check** yourself and others for ticks regularly after spending time outdoors
- **Remove** ticks promptly and safely if you have been bitten
- **Submit** ticks you find on yourself or your pets for identification
- **Recognize** the symptoms of Lyme disease
- **Seek** prompt medical care if illness occurs after exposure to ticks

New Tick Submission Kit

As part of an effort to streamline public tick submission and testing, we have developed a kit for submitting ticks to the State of Michigan. The kit consists of a screw cap plastic vial, a self-addressed, padded return envelope, a submission form, instructions for submission, and the Ticks and Your Health brochure.

The kit will be made available to local health departments, healthcare facilities, and veterinary clinics, and can be ordered via the Communicable Disease Division's publication order form at: www.michigan.gov/cdinfo

Learn More

MDCH Lyme disease Website:
http://www.michigan.gov/lymedisease

Centers for Disease Control and Prevention Lyme disease Website:
http://www.cdc.gov/lyme

Tickborne Diseases of the United States: A reference manual for health care providers:
http://www.cdc.gov/lyme/resources/TickborneDiseases.pdf

MDCH "Ticks and Your Health" Brochure:
http://michigan.gov/documents/emergingdiseases/resize_307382_7.pdf